

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (currently amended) A local coil removably insertable into a bore of for use in MRI systems comprising:

antenna conductors fitting about a portion of a patient to detect NMR signals from the portion of a patient; and

a motion sensor incorporated into the local coil and detecting motion of the portion of the patient to provide a signal indicating the motion;

whereby motion causing image artifacts may be detected; and

wherein the coil further includes a processor receiving the signal indicating motion and an NMR signal from the antenna conductors to correct the NMR signal according to the signal indicating motion.

2. (original) The local coil of claim 1 wherein the antenna conductors provide a volume for receiving a patient's head and detecting NMR signals therefrom, the volume allowing movement of the patient's head therein and wherein the motion sensor detects motion of the patient's head within the volume.

3. (original) The local coil of claim 1 wherein the motion sensor is an accelerometer attached to the patient's head.

4. (original) The local coil of claim 3 wherein the accelerometer is attached to the patient's head by a flexible strap.

5. (currently amended) The local coil of ~~claim 1~~ claim 2 including an optical fiber and wherein the accelerometer provides a photovoltaic cell receiving light power from the optical fiber to produce electricity for the accelerometer.

6. (original) The local coil of claim 1 including a light-emitting device transmitting the signal indicating motion as a light signal.

7. (original) The local coil of claim 6 including an optical fiber and wherein the light emitting device transmits the signal indicating motion over the optical fiber.

8. (currently amended) The local coil of claim 7 including a second optical fiber and wherein the motion sensor is an accelerometer and wherein the accelerometer includes a photovoltaic device receiving light power from the optical fiber to produce electricity for the accelerometer.

9. (cancelled) The local coil of claim 1 wherein the coil further includes a processor receiving the signal indicating motion and an NMR signal from the antenna conductors to correct the NMR signal according to the signal indicating motion.

10. (original) The local coil of claim 9 wherein the processor zeros the NMR signals when the indication of motion is above a predetermined threshold.

11. (original) The local coil of claim 1 wherein the processor corrects a phase of the NMR signals according to the motion signal.

12. (currently amended) A motion artifact correction system for local coils removably insertable into a bore of an ~~used with an~~ MRI machine comprising:

a motion sensor providing a signal indicating motion of a portion of a patient imaged by a local coil; and a processor system:

- (i) receiving the indication of motion from the motion sensor;
- (ii) receiving a detected NMR signal from the local coil;
- (iii) correcting the NMR signal based on the indication of motion; and
- (iv) providing the corrected NMR signal to the MRI machine.

13. (original) The motion artifact correction system of claim 12 wherein the processor zeros the NMR signal when the indication of motion is above a predetermined threshold.

14. (original) The motion artifact correction system of claim 12 wherein the processor corrects a phase of the NMR signal according to the motion signal.

15. (original) The motion artifact correction system of claim 12 wherein the motion sensor is an accelerometer attached to a patient's head.

16. (currently amended) The motion artifact correction system of ~~claim 12~~ claim 15 including an optical fiber and wherein the accelerometer includes a photovoltaic device receiving light power from the optical fiber to produce electricity for the accelerometer.

17. (original) The motion artifact correction system of claim 12 including a light emitting device transmitting the signal indicating motion as a light signal from the motion detector to the processor.

18. (original) The motion artifact correction system of claim 17 including an optical fiber and wherein the light emitting device transmits the signal indicating motion over the optical fiber.

19-22. (cancelled)